NASA CR 170547

FGGE/ERBM TAPE SPECIFICATION AND SHIPPING LETTER DESCRIPTION

MARCH 1983

National Aeronautics and Space Administration

Goddard Space Flight Center
Greenbelt, Maryland 20771

FGGE/ERBM TAPE SPECIFICATION AND SHIPPING LETTER DESCRIPTION

Systems & Applied Sciences Corp.
5809 Annapolis Road
Hyattsville, Maryland 20784

Contract No. 27393
SSD-T-8237-002-82

FGGE/ERBM TAPE SPECIFICATION AND SHIPPING LETTER DESCRIPTION

Systems and Applied Sciences Corporation
5809 Annapolis Road
Hyattsville, Maryland 20784

Contract No. NAS5-26753

SSD-T-8237-002-82

TABLE OF CONTENTS

1. INTRODUCTION

The Nimbus-7 FGGE/ERBM tape contains 27 ERB parameters which are extracted and reformatted from the Nimbus-7 ERB-MATRIX tape, in accordance with the FGGE level III International Exchange Format Specification.

There are four types of files on a FGGE/ERBM tape. The first file on the tape is a test file. The second file on the tape is a tape-header file which describes the data set characteristics and the contents of the tape. The third is the grid-descriptor file which contains the information of the ERB scanning channel target number and their associated latitude limits and longitude intervals. The remaining one or more files are data files. Single end-of-file (EOF) tape mark will be written after each file, and two (2) EOF marks will be written after the last data file on the tape.

All files are made up of one or more physical records. Each physical record contains 4240 bytes.

2. DATA SET PRODUCTION

2.1 General Description

The FGGE/ERBM computer program converts the terrestrial parameters retrieved from the Nimbus-7 ERB experiment (Table 2-1) into the FGGE level-III format. There are four programs for this conversion. They are TAPCAT, ERBM-2C, ERBM-DP and COPY800*. In the following sections, these four programs are briefly described.

*ERBM-2C program generates 1600 bpi tapes that will be sent to WDC-A and COPY800 program copies 1600 bpi tape to 800 bpi tapes that will be sent to WDC-B.

2.2 TAPCAT PROGRAM

2.2.1 General Description

The TAPCAT Program updates the ERBM.TAPES file as new ERB-Matrix tapes become available. The program obtains the Nimbus tape sequence number, data start time, and data stop time from the tape. These are inserted with the tape library slot number into the ERBM.TAPES file. The file is sorted by data start time, and is listed for user convenience.

2.2.2 Data Flow Chart

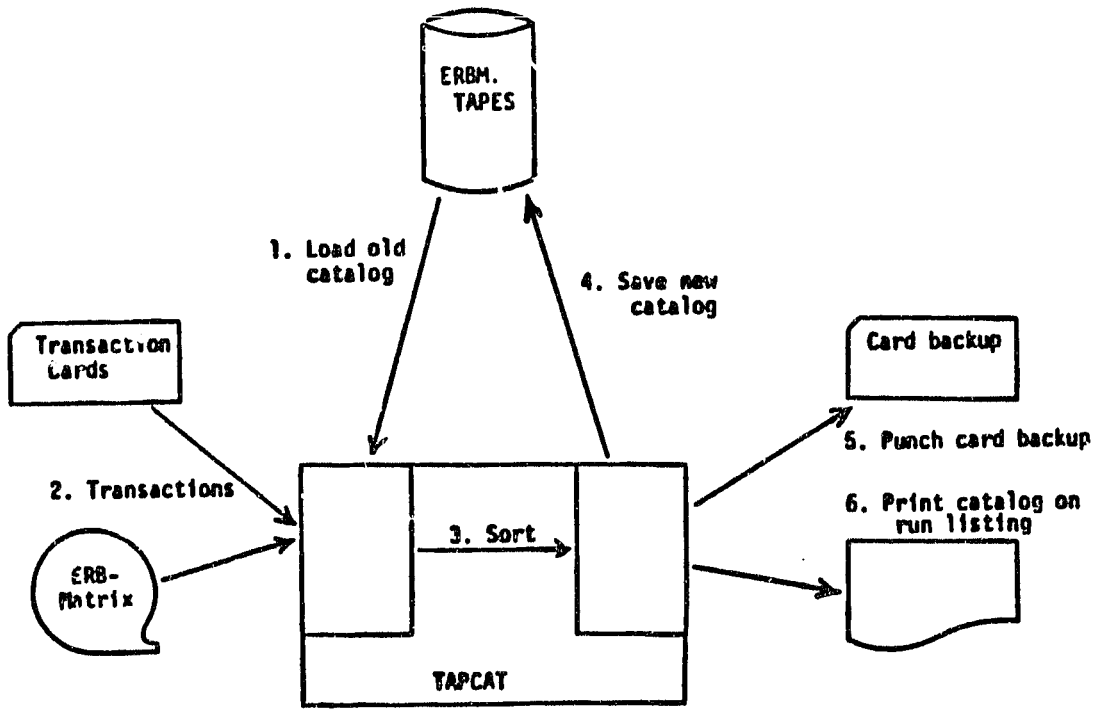

Figure 2-1. TAPCAT Data and Control Flow

TABLE 2-1

ERB Parameters

PARAMETERS	DESCRIPTIONS
1	Data Population of WFOV Observations - A.N.
2	Data Population of WFOV Observations - D.N.
3	L.W. Terrestrial Flux from WFOV Observations - A.N.
4	L.W. Terrestrial Flux from WFOV Observations - D.N.
5	Computed Maximum Reflected Energy (0.2-4.0 μm) for WFOV - A.N.
6	Computed Maximum Reflected Energy (0.2-4.0 μm) for WFOV - D.N.
7	Computed Maximum Reflected Energy (0.7-3.0 μm) for WFOV - A.N.
8	Computed Maximum Reflected Energy (0.7-3.0 μm) for WFOV - D.N.
9	Reflected Energy from WFOV Observations (0.2-4.0 μm) - A.N.
10	Reflected Energy from WFOV Observations (0.2-4.0 μm) - D.N.
11	Reflected Energy from WFOV Observations (0.7-3.0 μm) - A.N.
12	Reflected Energy from WFOV Observations (0.7-3.0 μm) - D.N.
13	Earth Albedo from WFOV Observations (0.2-4.0 μm) Using Solar Zenith Angle Correction
14	Earth Albedo from WFOV Observations (0.2-0.7 μm) Using Solar Zenith Angle Correction
15	Earth Albedo from WFOV Observations (0.7-3.0 μm) Using Solar Zenith Angle Correction
16	Net Radiation from WFOV Observations

* These parameters will not be on the FGGL/ERBM tapes.

TABLE 2-1 (continued)

ERB Parameters

PARAMETERS	DESCRIPTIONS
17	S.W. Data Population of NFOV Observations - A.N.
18	S.W. Data Population of NFOV Observations - D.N.
19	L.W. Terrestrial Flux from NFOV Observations - A.N.
20	L.W. Terrestrial Flux from NFOV Observations - D.N.
21	Average L.W. Terrestrial Flux from NFOV Observations (Weighted Average of A.N. and D.N. Data)
22	Earth Albedo from NFOV Observations
23	Net Radiation from NFOV Observations
24	L.W. Data Population of NFOV Observations - A.N.
25	L.W. Data Population of NFOV Observations - D.N.
*26	Data Population of WFOV Averaged L.W. Flux (Incremented on a Daily Basis)
*27	Data Population of NFOV Averaged L.W. Flux (Incremented on a Daily Basis)
*28	Averaged L.W. Terrestrial Flux from WFOV Observations (Average of A.N. and D.N. Data)
*29	Normalized Dispersion of L.W. Terrestrial Flux from WFOV Observations Based on Parameters 3 and 4
*30	Normalized Dispersion of Earth Albedo from WFOV Observations (0.2-4.0 μm) Based on Parameter 13 Daily Values
*31	Standard Deviation of Net Radiation from WFOV Observations
*32	Normalized Dispersion of Averaged L.W. Terrestrial Flux from NFOV Observations Based on Parameter 21
*33	Normalized Dispersion of Earth Albedo from NFOV Observations

*These parameters will not be on the FGGE/ERBM tapes.

TABLE 2-1 (Cont'd)

ERB Parameters

PARAMETER #	DESCRIPTIONS
*34	Standard Deviation of Net Radiation from NFOV Observations
*35	Minimum Earth Albedo from NFOV Observations
36	Average Solar Insolation
37	Earth Albedo from WFOV Observations (0.2-4.0 μm) NOT Using Solar Zenith Angle Correction in Calculations

A.N. = Ascending Node
D.N. = Descending Node

*These parameters will not be on the FGGE/ERBM tapes.

2.2.3 I/O Units List

2 - tape label input

4 - disk file ERBM.TAPES

5 - card input

6 - printer output

7 - punch card output

12 - ERB Matrix data records

2.3 ERBM-2C PROGRAM

2.3.1 General Description

The ERBM-2C Program determines the time span desired for the data, correlates this with the available data, and mounts the required ERB-MATRIX tapes. The selected terrestrial parameter (see Table 2-1) are converted to the FGGE level III International Exchange Format, and are stored on an intermediate tape in 1-month files. When the end of the desired data is reached, the final output tape is mounted.

The program writes a test file, a tape header file, and a grid descriptor file on the output tape, and then copies the data files from the intermediate tape to the output tape.

2.3.2 Data Flow Chart

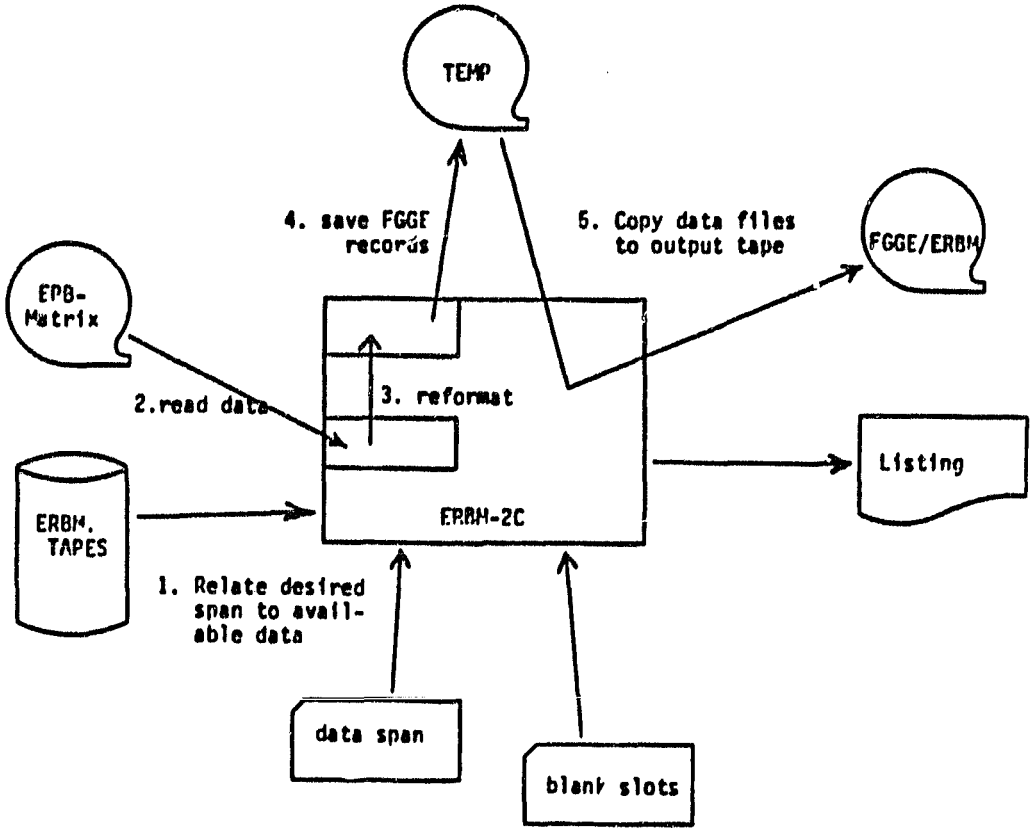

Figure 2-2. ERBM-2C Data and Control Flow.

2.3.3 I/O Units List

UNIT	DEVICE	LRECL/BLKSIZE(BYTES)	
1	9T/6250*	6300	ERB-Matrix tape label(IN)
2	9T/6250*	4240	temp. tape - data (OUT/IN)
5	card reader	80	data cards
6	printer		
8	unit 17	4240	final output tape data files
10	disk	80/800	ERBM.CLIST(TABLES), ERBM.CLIST(HDRFILE) (IN)
15	unit 1	4908/14724	ERB-Matrix data record (IN)
17	9T/6250*	80/4240	final output tape

*9 Track 6250 BPI computer compatible tape.

2.4 ERBM-DP PROGRAM

2.4.1 General Description

The ERBM-DP Program creates the shipping documentation and optional diagnostic information for the FGGE/ERBM data tapes. Statistics showing record counts and data element counts are compiled for comparison to the 2C printout. Special print options are available for detailed analysis of the data. All the output tapes (the 6250 BPI tapes are retained at GSFC, the 1600 BPI tapes are shipped to WDC-A, and the 800 BPI tapes are shipped to WDC-B) are processed separately through this program.

2.4.2 Data Flow Chart

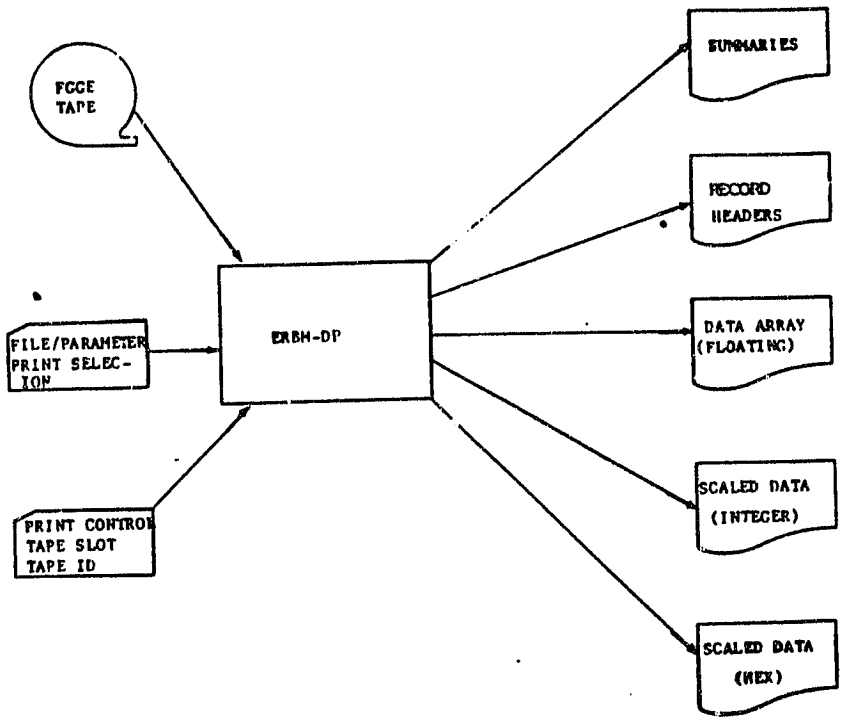

Figure 2-3. FGGE/ERBM-DP DATA FLOW

2.4.3 I/O Units List

Unit	Device	lrecl/blksize	
1	9T/1600BPI	4240	FGGE/ERBM tape input
5	card reader		data card*
6	printer		data summaries, error messages
8	printer		tape header, grid descriptor, data record headers
9	printer		data array dump: floating, de-scaled
10	printer		data array dump: integer, scaled
11	printer		data array dump: hex, scaled

* Data card specifies print level and parameter numbers to be dumped.

Print level = 0: unit 6
1: units 6 and 8
2: units 6, 8, and 9
3: units 6, 8, 9, and 10
4: units 6, 8, 9, 10, and 11

2.5 COPY800 PROGRAM

2.5.1 General Description

The COPY800 Program converts a 1600 BPI format FGGE/ERBM tape into an 800 BPI format FGGE/ERBM tape. The number of records in the test file is reduced to cover about 20 meters of the tape. The tape header is changed to state "800 BPI" instead of "1600 BPI" or "6250 BPI".

2.5.2 Data Flow Chart

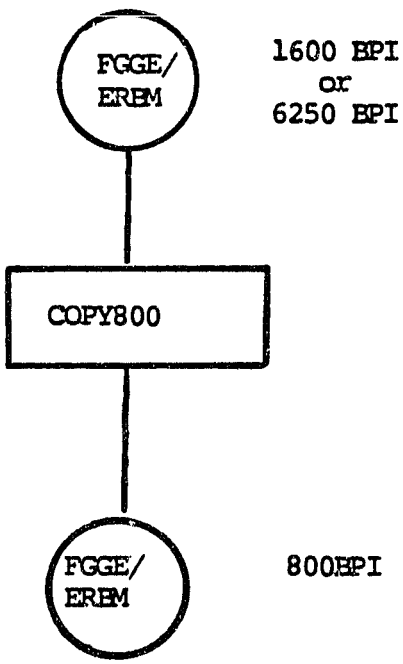

Figure 2-4. COPY800 Data Flow

2.5.3 I/O Units List

UNIT	DEVICE	
1	9 Track/1600 BPI or 9 Track/6250 BPI	FGGE/ERBM tape (IN)
2	9Track/800 BPI	FGGE/ERBM tape (OUT)
6	Printer	

3. FGGE/ERBM TAPE DESCRIPTION

3.1 Tape Specification

3.1.1 Physical tape characteristics

The physical characteristics of the FGGE/ERBM tape are described in the following:

Density:	800 BPI	1600 BPI	6250 BPI
Mode of Recording:	NRZI	PE	PE
Recording code:			
Header File and			
Grid Descriptor File:	EBCDIC	EBCDIC	EBCDIC
Test File and Data File:	Binary	Binary	Binary
Number of tracks:	9	9	9
Parity:	ODD	ODD	ODD

3.1.2 Tape Organization

The gross format of the FGGE/ERBM tape is shown in Figure 3-1. The first file on the tape is a test file and the second file is a tape header file. The third file on the tape is a grid-descriptor file and the remaining one or more files are data files. Single EOF tape mark is written after each file and 2 EOF tape marks are written after the last file on the tape.

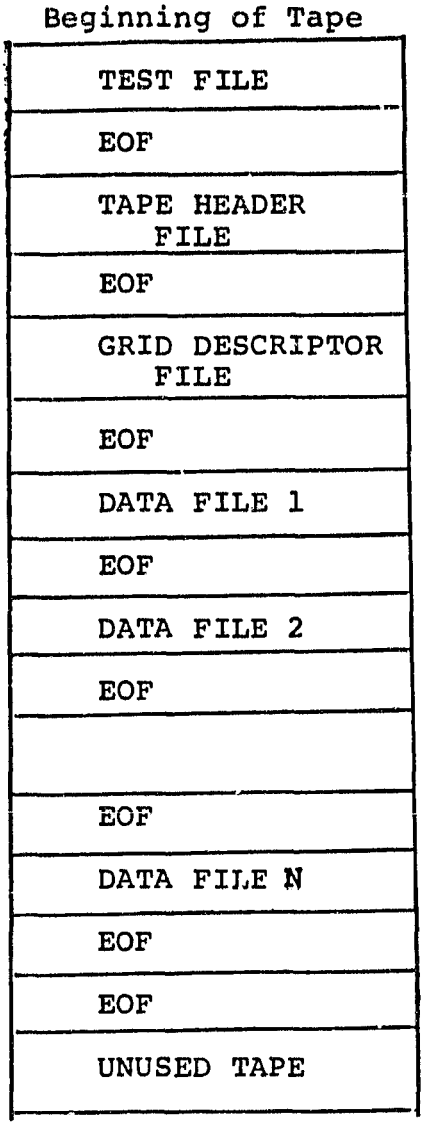

FIGURE 3-1 TAPE GROSS FORMAT

3.2 FILE SPECIFICATION

There are four types of files on a FGGE/ERBM tape. The first file on the tape is a test file. The second file on the tape is a tape header file. The third file on the tape is grid-descriptor file. The remaining files are the data files. Each of these files type is described in the following.

3.2.1 Test File

The test file contains 258 physical records on 1600 BPI tapes and 150 physical records on 800 BPI tapes. Each physical record contains 53 logical records. Each logical record contains 80 bytes. Each byte contains a hexadecimal FF (binary 11111111).

3.2.2 Tape-Header File

The tape-header file contains 4 physical records. Each physical record contains 53 logical records. Each logical record contains 80 bytes. Each byte contains an EBCDIC coded character.

The tape-header file contains information describing the data-set characteristics and the contents of the tape.

The contents of each of these logical records of the first physical record are shown in the Figure 3-2.

LOGICAL RECORD CONTENTS

```
FGGE2C20007811160078113018
004240
FORMAT(20A4)
0123456789=:> STUVWXYZ,)-JKLMNOPQR*:;+ABCDEFGHI.):<
9 TRACK, 1600 BPI
BINARY DATA, ODD PARITY
IBM 360/91
NASA / GODDARD SPACE FLIGHT CENTER          U.S.A.
FORMAT(1060A4)


THIS TAPE CONTAINS SELECTED TERRESTRIAL PARAMETERS FROM THE NIMBUS-7
EARTH RADIATION BUDGET EXPERIMENT.

PROCESSED FOR FGGE ON:  MON MAR 22,1982

SCIENTIST:    GARY N WOLFORD
ADDRESS:      NASA / GODDARD SPACE FLIGHT CENTER
              GREENBELT, MARYLAND     20771
              UNITED STATES OF AMERICA          (U.S.A.)


                 ********************************

THIS TAPE FOLLOWS THE FGGE LEVEL-3 FORMATS INSTEAD OF THE LEVEL-2 FORMATS.

WARNING:    THE FILL FLAG FOR THE ARRAY OF PACKED INTEGERS  Q(I) IS DEFINED
            AS THE VALUE  B'1000000000000000' = X'8000' = -32768.
            THE USER'S PROGRAM SHOULD CHECK FOR THIS FILL FLAG -BEFORE-
            UNPACKING THE  Q(I),  AS THE UNPACKING PRODUCES UNPREDICTABLE
            RESULTS WHEN PERFORMED ON THE FILL FLAG.

(*************************************************************************)
```

FIGURE 3-2. TAPE-HEADER FILE-FIRST THIRTY-FOUR LOGICAL RECORDS

Record 1: The first logical record contains the project name (FGGE2C), the procedure code (2000), and the beginning and ending synoptic time of data on the tape.

The times are variable data and contain the major synoptic times of the first and the last data files on the tape. There are two-byte fields for the year (YF,YL), the month (MF,ML), the day (DF,DL), and the hour (HF,HL) of the first and last major synoptic times. (The character F indicates the first major synoptic time and L indicates the last major synoptic time.) The year field represents the last two digits of the year. As an example, 1981 would be represented by an EBCDIC-coded 81. The month values range from 01 to 12. The day values range from 01 to 31. The nour values are either 00, 06, 12 or 18.

Record 2: The second logical record contains the BLOCKSIZE of the physical record in the file of the tape.

Record 3: The third logical record contains the FORTRAN format of the first 80 bytes (e.g., 20A4).

Record 4: The fourth logical record contains the translation table which will be stored exactly as shown in Figure 3-2.

Record 5-6: The fifth and sixth logical records contains the information on the physical tape characteristics.

Record 7: The seventh logical record contains the name of the the computer used to generate level III data.

Record 8: The eighth logical record contains the name of the center and country providing the data set.

Record 9: The ninth logical record contains the FORTRAN format to read level III data.

Record 10-11: The tenth and eleventh logical records are filled with binary coded blanks.

Record 12-13: The twelth and thirteenth logical records contains the name of the data set.

Record 14: The fourteenth logical record is filled with binary coded blanks.

Record 15: The fifteenth logical record contains the date the tape was created.

Record 16: The sixteenth logical record is filled with binary coded blank.

Record 17-20: The seventeenth logical record through the twentieth logical record contain the name of the responsible scientist and full address of the responsible scientist.

Record 21-36: The twenty-first logical record through the thirty-sixth logical record contain the comments concerning representation of the data values (particularly fill data) in the data records.

Record 37-53: The thirty-seventh logical record through the fifty-third logical record contain part of the card image listing of Table 1 in Appendix III of THE FORMATS FOR THE INTERNATIONAL EXCHANGE OF LEVEL III DATA SETS DURING THE FGGE in Appendix III.

The second physical record through the fourth physical record contain the remaining part of the card image listing of TABLE I, the card image listing of TABLE III, TABLE VII, TABLE VIII, and TABLE XI of the FORMATS FOR THE INTERNATIONAL EXCHANGE OF LEVEL III DATA SETS DURING THE FGGE.

3.2.3 Grid Descriptor File

The grid descriptor file contains information on the ERB scanning channel target numbers and their associated latitude limits and longitude intervals. This information is listed in Figure 3-3. The Grid descriptor file contains EBCDIC coded characters.

3.2.4 Data File

There are two types of logical records in a data file. Each of these logical record types is described in the following.

3.2.4.1 Header Logical Record

The first logical record of each physical record of the data file is the header logical record. The description is shown in Figure 3-4. Bytes 49 through 50 contain the scaled value of the first data point. Bytes 79 through 80 contain the scaled value of the sixteenth data point.

3.2.4.2 Data Logical Record

Following the header logical record are data logical records. Each data logical record contains forty scaled value data points. The last data logical record only contains fourteen scaled value data points. The remaining 52 bytes of the last data logical record are filled with zeroes. One physical record format is shown in Figure 3.5.

THE ERB NUMBERING SYSTEM ASSIGNS A NUMBER, BETWEEN 1 AND 2070, TO EACH TARGET AREA STARTING FROM THE SOUTH POLE.
FOR EACH LATITUDE BAND THE LONGITUDE INTERVALS START AT THE 0 DEGREE MERIDIAN AND PROGRESS WEST BY THE INCREMENTS LISTED.
WITHIN EACH LATITUDE BELT THE TARGET NUMBERS INCREASE WESTWARD FROM THE 0.0 DEG MERIDIAN AND CONTINUE TO INCREASE WITHIN THE ADJACENT LATITUDE BELT TO THE NORTH

TARGET NO.	LATITUDE LIMITS		LONGITUDE INTERVAL
1-3	POLE	85.5	120.0
4-12	85.5	81.0	40.0
13-28	81.0	76.5	22.5
29-48	76.5	72.0	18.0
49-78	72.0	67.5	12.0
79-114	67.5	63.0	10.0
115-154	63.0	58.5	9.0
155-199	58.5	54.0	8.0
200-247	54.0	49.5	7.5
248-307	49.5	45.0	6.0
308-367	45.0	40.5	6.0
368-427	40.5	36.0	6.0
428-499	36.0	31.5	5.0
500-571	31.5	27.0	5.0
572-643	27.0	22.5	5.0
644-715	22.5	18.0	5.0
716-795	18.0	13.5	4.5
796-875	13.5	9.0	4.5
876-955	9.0	4.5	4.5
956-1035	4.5	EQUATOR	4.5
1036-1115	EQUATOR	4.5	4.5
1116-1195	4.5	9.0	4.5
1196-1275	9.0	13.5	4.5
1276-1355	13.5	18.0	4.5
1356-1427	18.0	22.5	5.0
1428-1499	22.5	27.0	5.0
1500-1571	27.0	31.5	5.0
1572-1643	31.5	36.0	5.0
1644-1703	36.0	40.5	6.0
1704-1763	40.5	45.0	6.0
1764-1823	45.0	49.5	6.0
1824-1871	49.5	54.0	7.5
1872-1916	54.0	58.5	8.0
1917-1956	58.5	63.0	9.0
1957-1992	63.0	67.5	10.0
1993-2022	67.5	72.0	12.0
2023-2042	72.0	76.5	18.0
2043-2058	76.5	81.0	22.5
2059-2067	81.0	85.5	40.0
2068-2070	85.5	POLE	120.0

Fig. 3-3. Grid Descriptor File

Bits	No. of Bits	Parameter	Description	Remarks*	Value
1 - 12	12	Q	Data type	See Table I	7D1-7DF,7E1-7E9, 7F(HEX)
13 - 24	12	S_1	Type of Surface 1	See Table I	TD0 (HEX)
25 - 32	8	F_1	Time	See Table III	E (HEX)
33 - 36	4	T_1	Time marker 1	See Table III	B (HEX)
37 - 56	20	C_1	Numerical value of surface 1		
57 - 64	8	E_1	Exponent of 10 for C_1		
65 - 68	4	M	Level-difference marker	See Table IV	0
69 - 76	8	X	Exception marker	See Table V	255 (DEC)
77 - 88	12	S_2	Type of surface 2	See Table I	0
89 - 96	8	F_2	Time marker 2	See Table III	0
97 - 100	4	N	Spectral quantity marker	See Table II	0
101 - 120	20	C_2	Numerical value of surface 2		
121 - 128	8	E_2	Exponent of 10 for C_2		
129 - 136	8	CD	Climatological marker	See Table VI	0
137 - 144	8	CM	Climatological marker	See Table VI	0
145 - 152	8	KS	Method marker	See Table VIII	241-247 (DEC)
153 - 160	8	K	Grid-type marker	See Table VII	FE (HEX)
161 - 176	16		Unused	Set to zero	
177 - 192	16	NW	Number of 32-bit words in record		
193 - 200	8	JJ	Year	78 = 1978	
201 - 208	8	MM	Month	1-12 (Jan.-Dec.)	
209 - 216	8	YY	Day of month	1-31	
217 - 224	8	GG	Initial hour	GMT	
225 - 232	8	R	Run marker	See Table IX	FF (HEX)
233 - 240	8	G	Generating code	Reserved for Natl. use	
241 - 256	16	J	Number of data values in the array	Starting at bit 385	
257 - 272	16	B	Number of 8-bit bytes in the record		
273 - 288	16	Z	Logical checksum (optional)	See Appendix D	
289 - 320	32	A	Mid-range value	See Appendix B	
321 - 336	16		Unused	Set to zero	
337 - 352	16	N	Scaling value	See Appendix B	
353 - 384	32		Unused	Set to zero	
385 - 400	16	Q_1	Scaled value 1		
401 - 416	16	Q_2	Scaled value 2		
.	.	.	.		
.	.	.	.		
.	.	.	.		
625 - 640	16	Q_{16}	Scaled value 16		

Figure 3-4 Header Logical Record

*Refer to the APPENDIX 11, APPENDIX A. of "FGGE DATA MANAGEMENT PLAN". Specific values for these parameters are listed in Table 3-1 through 3-10.

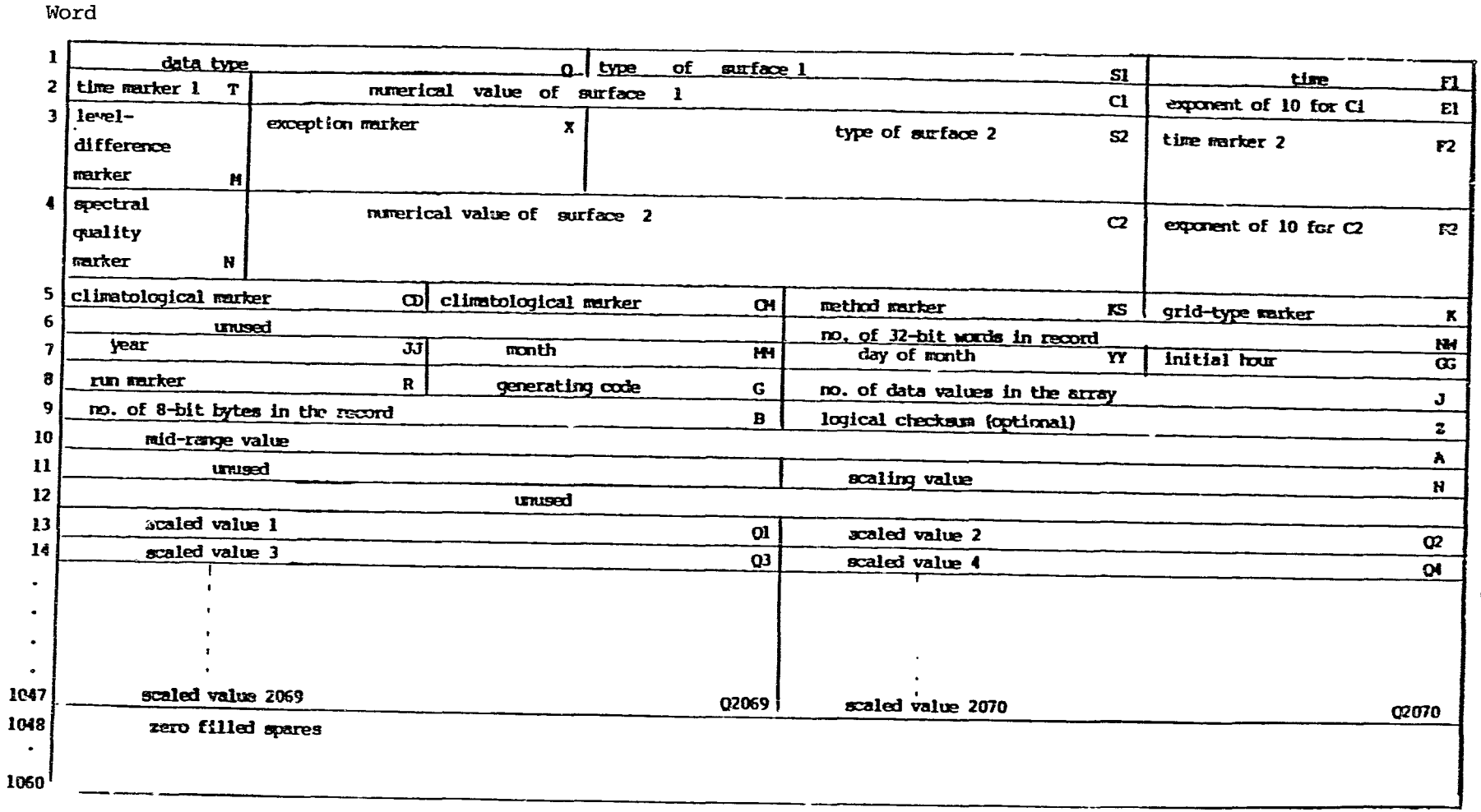

Fig. 3-5. Physical Record

Table 3-1. Q and S Parameters and Surfaces (1)

Number Hex	Number DEC	Abbreviation	Parameter Name	Standard Unit
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
			Nimbus 7 ERB Reference Surface	
7D0	2000	-ERBSU	Upper Troposphere	
			Nimbus-7 ERB Wide Field of View Parameters (Daily and Monthly World Grids)	
7D1	2001	-WPOPA	Data Population - Ascending Node (AN)	Dimensionless
7D2	2002	-WPOPD	Data Population - Descending Node (DN)	Dimensionless
7D3	2003	-WLWFA	Long Wave Terrestrial Flux - AN	$W-m^{-2}$
7D4	2004	-WLWFD	Long Wave Terrestrial Flux - DN	$W-m^{-2}$
7D5	2005	-CMR1A	Computed Maximum Reflected Energy (.2-4 μ m) - AN	$W-m^{-2}$
7D6	2006	-CMR1D	Computed Maximum Reflected Energy (.2-4 μ m) - DN	$W-m^{-2}$
7D7	2007	-CMR3A	Computed Maximum Reflected Energy (.7-3 μ m) - AN	$W-m^{-2}$
7D8	2008	-CMR3D	Computed Maximum Reflected Energy (.7-3 μ m) - DN	$W-m^{-2}$
7D9	2009	-RFE1A	Reflected Energy (.2-4 μ m) - AN	$W-m^{-2}$
7DA	2010	-RFE1D	Reflected Energy (.2-4 μ m) - DN	$W-m^{-2}$
7DB	2011	-RFE3A	Reflected Energy (.7-3 μ m) - AN	$W-m^{-2}$
7DC	2012	-RFE3D	Reflected Energy (.7-3 μ m) - DN	$W-m^{-2}$
7DD	2013	-WALB1	Earth Albedo (.2-4 μ m)	Percent
7DE	2014	-WALB2	Earth Albedo (.2 - .7 μ m)	Percent
7DF	2015	-WALB3	Earth Albedo (.7-3 μ m)	Percent
7E0	2016	-WNETR	Net Radiation	$W-m^{-2}$
			Nimbus-7 ERB Narrow Field of View Parameters (Daily and Monthly World Grids)	
7E1	2017	-NSWPA	Short Wave Data Population - AN	Dimensionless
7E2	2018	-NSWPD	Short Wave Data Population - DN	Dimensionless
7E3	2019	-NLWFA	Long Wave Terrestrial Flux - AN	$W-m^{-2}$
7E4	2020	-NLWFD	Long Wave Terrestrial Flux - DN	$W-m^{-2}$
7E6	2022	-NFALB	Earth Albedo	Percent
7E7	2023	-NNETR	Net Radiation	$W-m^{-2}$
7E8	2024	-NLWPA	Long Wave Data Population - AN	Dimensionless
7E9	2025	-NLWPD	Long Wave Data Population - DN	Dimensionless
			Nimbus-7 ERB Miscellaneous Parameters	
7F4	2036	-SOLIN	Average Solar Insolation - Daily/Monthly World Grid	$W-m^{-2}$
7F5	2037	-WALBU	Uncorrected Earth Albedo (.2-4 μ m) -	Percent

Refer "FGGE DATA MANAGEMENT PLAN" Appendix II, Appendix A, TABLE I.

TABLE 3-2: N spectral quantity marker[1]

N	Meaning
0	Not to be assigned (gridded data implied)

TABLE 3-3: Time Marker T[2]

T(Hex)	Meaning	F1	F2
0	Indicate the field is instantaneous, e.g. a 500-mb height forecast =	Forecast hour hour (tau)	0
B	Indicate the field is formed from instantaneous values of the same parameter	Maximum number of orbits contributing to average.	0

TABLE 3-4: M level difference marker[3]

M	Meaning
0	Indicates S_2 and L_2 are not applicable

(1) Refer "FGGE DATA MANAGEMENT PLAN" APPENDIX II, APPENDIX A, TABLE II

(2) Refer TABLE III of the above document

(3) Refer TABLE IV of the above document

TABLE 3-5: X exception marker[1]

X(DEC)	Meaning
255	Not applicable. The exception marker (x) does not apply for these data or when the value of x is greater than 254.

TABLE 3-6: CM and CD climatology marker[2]

(Month-Hour)

CM	Meaning
00	Not applicable

(Day of Month)

CD	Meaning
00	Not applicable

(1) Refer "FGGE DATA MANAGEMENT PLAN" Appendix II, Appendix A, TABLE V.

(2) Refer TABLE VI of the above document.

TABLE 3-7. K grid-type marker[1]

K		Grid Description
Hex	Dec	
FE	254	2070 elements equal area World Grid composed of 4.5 degree latitude bands starting at the South Pole and with different longitude increments in each band (120 degrees at the poles to 4.5 degrees at the equator) to obtain approximately 500 km x 500 km grid elements

TABLE 3-8. KS method marker[2]

KS	Meaning
241	Field formed by count of number of events
242	Field formed from radiances or sums and differences of radiances in different spectral intervals without solar zenith angle and/or solar insolation correction.
243	Field formed from radiances or sums and differences of radiances in different spectral intervals with solar zenith angle and/or solar insolation correction.
244	Field formed from irradiances unweighted by degree of illumination.
246	Field formed from ratio of irradiances without solar zenith angle and/or solar insolation correction.
247	Field formed from ratio of irradiances with solar zenith angle and/or solar insolation correction.

(1) Refer "FGGE DATA MANAGEMENT PLAN" Appendix II, Appendix A, TABLE VII.

(2) Refer TABLE VIII of the above document.

TABLE 3-9: R run marker[1]

R(HEX)	Meaning
FF	Not applicable

TABLE 3-10. Codes for FGGE Data Producers[2]
(Extension for N-7 ERB Level II-C)

Code Figure	Meaning
0031	Level IIIA Data (WMC Washington)
0032	Level IIIA Data (WMC Moscow)
0033	Level IIIA Data (WMC Melbourne)
0331	Level IIIB Producer 1
0332	Level IIIB Producer 2
2000	Level IIC ERB Data (U.S.A. Experimental Data Producer)

(1) Refer "FGGE DATA MANAGEMENT PLAN" Appendix II, Appendix A, TABLE IX.

(2) Refer TABLE XI of the above document.

4. SHIPPING LETTER DESCRIPTION

The shipping letter of a FGGE/ERBM tape is the printout of the ERBM-DP Program with option 0. There are five major parts in the shipping letter.

The first part contains information on the tape identifier, slot number, and the printout option.

The second part contains the information on the characteristics and the contents of the tape.

The third part contains tables describing parameter definition, time, grid, method, and data procedure markers.

The fourth part contains the grid information.

The fifth part contains statistics,the count of the available daily/ monthly records and the counts of non-fill data and non-zero populations for 27 parameters. A sample shipping letter is included in the following pages.

```
                    E R B - M - D P    P R O G R A M

                    ************************
                    *                      *
                    *  FGGE TAPE   UA1100  *
                    *                      *
                    ************************

          TAPE DESIGNATOR    UA1100
          SLOT NUMBER        BL6055
          PRINT LEVEL        0
               SUMMARY PRINTOUT                = ON
               RECORD HEADER PRINT             = OFF
               DATA DUMP (FLOATING)            = OFF
               SCALED DATA DUMP (INTEGER)      = OFF
               SCALED DATA DUMP (HEX)          = OFF


 END FILE 1  -  TEST FILE:      256 BLOCKS.      0 I/O ERRORS.      0 DATA ERRORS

 TAPE HEADER:
          FGGE2C2000781116000781130 8
          004240
          FORMAT(20A4)
          0123456789=:> STUVWXYZ.)-JKLMNOPQR*';+ABCDEFGHI.)_<
          9 TRACK, 1600 BPI
          BINARY DATA, ODD PARITY
          IBM 360/91
          NASA / GODDARD SPACE FLIGHT CENTER          U.S.A.
          FORMAT(10A6A4)

          THIS TAPE CONTAINS SELECTED TERRESTRIAL PARAMETERS FROM THE NIMBUS-7
          EARTH RADIATION BUDGET EXPERIMENT.

          PROCESSED FOR FGGE ON:  MON MAR 22,1982

          SCIENTIST:    GARY N WOLFORD
          ADDRESS:      NASA / GODDARD SPACE FLIGHT CENTER
                        GREENBELT, MARYLAND     20771
                        UNITED STATES OF AMERICA          (U.S.A.)

                          ************************

          THIS TAPE FOLLOWS THE FGGE LEVEL-3 FORMATS INSTEAD OF THE LEVEL-2 FORMATS.

          WARNING:   THE FILL FLAG FOR THE ARRAY OF PACKED INTEGERS  Q(I) IS DEFINED
                     AS THE VALUE  B'1000000000000000' = X'8000' = -32768.
                     THE USER'S PROGRAM SHOULD CHECK FOR THIS FILL FLAG -BEFORE-
                     UNPACKING THE  Q(I),  AS THE UNPACKING PRODUCES UNPREDICTABLE
                     RESULTS WHEN PERFORMED ON THE FILL FLAG.

          ***************************************************************************
```

TABLES I
Q AND S PARAMETERS AND SURFACES
(EXTENSION FOR N-7 ERB LEVEL II-C)

NUMBER HEX	NUMBER DEC	ABBR.	PARAMETER NAME	STANDARD UNIT
700	2000	-ERBSU	N-7 ERB REFERENCE SURFACE UPPER TROPOSPHERE	4
			N-7 ERB WIDE FIELD OF VIEW PARAMETERS (DAILY AND MONTHLY WORLD GRIDS)	
701	2001	-WPOPA	DATA POPULATION-ASCENDING NODE (AN)	DIMENSIONLESS
702	2002	-WPOPD	DATA POPULATION-DESCENDING NODE (DN)	DIMENSIONLESS
703	2003	-WLWFA	LONG WAVE TERRESTIAL FLUX - AN	W/(M**2)
704	2004	-WLWFD	LONG WAVE TERRESTIAL FLUX - DN	W/(M**2)
705	2005	-CMR1A	COMPUTED MAXIMUM REFLECTED ENERGY(.2-4UM)-AN	W/(M**2)
706	2006	-CMR1D	COMPUTED MAXIMUM REFLECTED ENERGY(.2-4UM)-DN	W/(M**2)
707	2007	-CMR3A	COMPUTED MAXIMUM REFLECTED ENERGY(.7-3UM)-AN	W/(M**2)
708	2008	-CMR3D	COMPUTED MAXIMUM REFLECTED ENERGY(.7-3UM)-DN	W/(M**2)
709	2009	-RFE1A	REFLECTED ENERGY(.2-4UM)-AN	W/(M**2)
70A	2010	-RFE1D	REFLECTED ENERGY(.2-4UM)-DN	W/(M**2)
70B	2011	-RFE3A	REFLECTED ENERGY(.7-3UM)-AN	W/(M**2)
70C	2012	-RFE3D	REFLECTED ENERGY(.7-3UM)-DN	W/(M**2)
70D	2013	-WALB1	EARTH ALBEDO(.2-4UM)	PERCENT
70E	2014	-WALB2	EARTH ALBEDO(.2-.7UM)	PERCENT
70F	2015	-WALB3	EARTH ALBEDO(.7-3UM)	PERCENT
7E0	2016	-WNETR	NET RADIATION	W/(M**2)
			N-7 ERB NARROW FIELD OF VIEW PARAMETERS (DAILY AND MONTHLY WORLD GRIDS)	
7E1	2017	-NSWPA	SHORT WAVE DATA POPULATION - AN	DIMENSIONLESS
7E2	2018	-NSWPD	SHORT WAVE DATA POPULATION - DN	DIMENSIONLESS
7E3	2019	-NLWFA	LONG WAVE TERRESTIAL FLUX - AN	W/(M**2)
7E4	2020	-NLWFD	LONG WAVE TERRESTIAL FLUX - DN	W/(M**2)
7E6	2022	-NFALB	EARTH ALBEDO	PERCENT
7E7	2023	-NNETR	NET RADIATION	W/(M**2)
7E8	2024	-NLWPA	LONG WAVE DATA POPULATION - AN	DIMENSIONLESS
7E9	2025	-NLWPD	LONG WAVE DATA POPULATION - DN	DIMENSIONLESS
			N-7 ERB MISCELLANEOUS PARAMETERS	
7F4	2036	-SOLIN	AVERAGE SOLAR INSOLATION-DAILY/MONTHLY WORLD GRID	W/(M**2)
7F5	2037	-WALBU	UNCORRECTED EARTH ALBEDO(.2-4UM) - MONTHLY WORLD GRID	PERCENT

TABLES III
TIME MARKER T (4 BITS)
(EXTENSION FOR N-7 ERB LEVEL II-C)

T	MEANING	F1	F2
0	INDICATES THE FIELD IS FORMED FROM A NUMBER OF FIELDS OF THE SAME PARAMETER TO OBTAIN AVERAGE OR NORMAL VALUES. IF THE AVERAGE APPLIES TO A NUMBER OF DAYS, F1 IS USED TO INDICATE THIS NUMBER; AND IF THE AVERAGE APPLIES TO A NUMBER OF YEARS, F2 IS USED TO INDICATE THAT NUMBER.	DAYS USED IN AVERAGE OR 0	0 OR YEARS USED IN AVERAGE
11	INDICATES THE FIELD IS FORMED FROM A NUMBER OF INSTANTANEOUS VALUES OF THE SAME PARAMETER.	MAXIMUM NUMBER OF ORBITS CONTRIBUTING TO AVERAGE.	0
12	INDICATES THE FIELD IS FORMED FROM OTHER PARAMETER FIELDS. EACH OF THESE OTHER PARAMETER FIELDS IS FORMED FROM A NUMBER OF FIELDS OF EACH PARAMETER TO OBTAIN AVERAGE OR NORMAL VALUES. IF THE AVERAGE APPLIES TO A NUMBER OF DAYS F1 IS USED TO INDICATE THIS NUMBER; AND IF THE AVERAGE APPLIES TO A NUMBER OF YEARS, F2 IS USED TO INDICATE THAT NUMBER.	DAYS USED IN AVERAGE OR 0	0 OR YEARS USED IN AVERAGE.

TABLE VII
K GRID-TYPE MARKER (8 BITS)
(EXTENSION FOR N-7 ERB LEVEL II-C)

K8X	K DEC	GRID DESCRIPTION
FE	254	2070 ELEMENT EQUAL AREA WORLD GRID 4.5 DEGREE LATITUDE BANDS STARTING AT THE SOUTH POLE AND WITH DIFFERENT LONGITUDE INCREMENTS IN EACH BAND (120 DEGREES AT THE POLES TO 4.5 DEGREES AT THE EQUATOR) TO OBTAIN APPROXIMATELY 500KM X 500KM GRID ELEMENTS.

TABLE VIII
KS METHOD MARKER (8 BITS)
(EXTENSION FOR N-7 ERB LEVELE II-C)

KS	MEANING
241	FIELD FORMED BY COUNT OF NUMBER OF EVENTS.
242	FIELD FORMED FROM RADIANCES OF SUMS AND DIFFERENCES OF RADIANCES IN DIFFERENT SPECTRAL INTERVALS WITHOUT SOLAR ZENITH ANGLE AND/OR SOLAR INSOLATION CORRECTION.
243	FIELD FORMED FROM RADIANCES OR SUMS AND DIFFERENCES OF RADIANCES IN DIFFERENT SPECTRAL INTERVALS WITH SOLAR ZENITH ANGLE AND/OR SOLAR INSOLATION CORRECTION.
244	FIELD FORMED FROM IRRADIANCES UNWEIGHTED BY DEGREE OF ILLUMINATION.
245	FIELD FORMED FROM IRRADIANCES WEIGHTED BY DEGREE OF ILLUMINATION.
246	FIELD FORMED FROM RATIO OF IRRADIANCES WITHOUT SOLAR ZENITH ANGLE AND/OR SOLAR INSOLATION CORRECTION.
247	FIELD FORMED FROM RATIO OF IRRADIANCES WITH SOLAR ZENITH ANGLE AND/OR SOLAR INSOLATION CORRECTION.

TABLE XI
CODES FOR FGGE DATA PRODUCERS
(EXTENSION FOR N-7 ERB LEVEL II-C)

CODE FIGURE	MEANING
0031	LEVEL IIIA DATA (NMC WASHINGTON)
0032	LEVEL IIIA DATA (NMC MOSCOW)
0033	LEVEL IIIA DATA (NMC MELBOURNE)
0331	LEVEL IIIB PRODUCER 1
0332	LEVEL IIIB PRODUCER 2
2000	LEVEL IIC ERB DATA (U.S.A. EXPERIMENTAL SATELLITE DATA PRODUCER)

****

END FILE 2 - TAPE HEADER FILE: 4 BLOCKS. 0 I/O ERRORS

GRID DESCRIPTOR FILE: THE ERB NUMBERING SYSTEM ASSIGNS A NUMBER, BETWEEN 1 AND 2070, TO EACH TARGET AREA STARTING FROM THE SOUTH POLE.
FOR EACH LATITUDE BAND THE LONGITUDE INTERVALS START AT THE 0 DEGREE MERIDIAN AND PROGRESS WEST BY THE INCREMENTS LISTED.
WITHIN EACH LATITUDE BELT THE TARGET NUMBERS INCREASE WESTWARD FROM THE 0.0 DEG MERIDIAN AND CONTINUE TO INCREASE WITHIN THE ADJACENT LATITUDE BELT TO THE NORTH

TARGET NO.	LATITUDE LIMITS		LONGITUDE INTERVAL
1-3	POLE	85.5	120.0
4-12	85.5	81.0	40.0
13-28	81.0	76.5	22.5
29-48	76.5	72.0	18.0
49-78	72.0	67.5	12.0
79-114	67.5	63.0	10.0
115-154	63.0	58.5	9.0
155-199	58.5	54.0	8.0
200-247	54.0	49.5	7.5
248-307	49.5	45.0	6.0
308-367	45.0	40.5	6.0
368-427	40.5	36.0	6.0
428-499	36.0	31.5	5.0
500-571	31.5	27.0	5.0
572-643	27.0	22.5	5.0
644-715	22.5	18.0	5.0
716-795	18.0	13.5	4.5
796-875	13.5	9.0	4.5
876-955	9.0	.5	4.5
956-1035	4.5	EQUATOR	4.5
1036-1115	EQUATOR	4.5	4.5
1116-1195	4.5	9.0	4.5
1196-1275	9.0	13.5	4.5
1276-1355	13.5	18.0	4.5
1356-1427	18.0	22.5	5.0
1428-1499	22.5	27.0	5.0
1500-1571	27.0	31.5	5.0
1572-1643	31.5	36.0	5.0
1644-1703	36.0	40.5	6.0
1704-1763	40.5	45.0	6.0
1764-1823	45.0	49.5	6.0
1824-1871	49.5	54.0	7.5
1872-1916	54.0	58.5	9.0
1917-1956	58.5	63.0	9.0
1957-1992	63.0	67.5	10.0
1993-2022	67.5	72.0	12.0
2023-2042	72.0	76.5	18.0
2043-2058	76.5	81.0	22.5
2059-2067	81.0	85.5	40.0
2068-2070	85.5	POLE	120.0

END FILE 3 - GRID DESCRIPTOR FILE: 1 BLOCKS. 0 I/O ERRORS

ERBMATRIX COUNT OF AVAILABLE DAILY/MONTHLY RECORDS FOR 1978 : NOVEMBER

DAY #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2001 POPI WFOV - AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2002 POPI WFOF - ON	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2003 L.W.TERR.FLUX WFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2004 L.W.TERR.FLUX WFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2005 MAX REFL.ENERGY(.2-4UM)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2006 MAX REFL.ENERGY(.2-4UM)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2007 MAX REFL.ENERGY(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2008 MAX REFL.ENERGY(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2009 REFL.ENERGY WFOV(.2-4)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2010 REFL.ENERGY WFOV(.2-4)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2011 REFL.ENERGY WFOV(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2012 REFL.ENERGY WFOV(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2013 ALBEDO WFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2014 ALBEDO WFOV(.2-.7)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2015 ALBEDO WFOV(.7-3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2016 NET RADIATION WFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2017 S.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2018 S.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2019 L.W.TERR.FLUX NFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2020 L.W.TERR.FLUX NFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2021 L.W.TERR.FLUX NFOV-AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2022 ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2023 NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2024 L.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2025 L.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2026 AVG.SOLAR INSOLATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2037 ALBEDO WFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

DAY #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY
2001 POPI WFOV - AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2002 POPI WFOF - ON	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2003 L.W.TERR.FLUX WFOV-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2004 L.W.TERR.FLUX WFOV-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2005 MAX REFL.ENERGY(.2-4UM)-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2006 MAX REFL.ENERGY(.2-4UM)-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2007 MAX REFL.ENERGY(.7-3)-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2008 MAX REFL.ENERGY(.7-3)-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2009 REFL.ENERGY WFOV(.2-4)-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2010 REFL.ENERGY WFOV(.2-4)-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2011 REFL.ENERGY WFOV(.7-3)-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2012 REFL.ENERGY WFOV(.7-3)-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2013 ALBEDO WFOV(.2-4)	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2014 ALBEDO WFOV(.2-.7)	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2015 ALBEDO WFOV(.7-3)	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2016 NET RADIATION WFOV	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2017 S.W.POP.NFOV -AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2018 S.W.POP.NFOV -DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2019 L.W.TERR.FLUX NFOV-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2020 L.W.TERR.FLUX NFOV-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2021 L.W.TERR.FLUX NFOV-AN+DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2022 ALBEDO NFOV	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2023 NET RADIATION NFOV	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2024 L.W.POP.NFOV -AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2025 L.W.POP.NFOV -DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2026 AVG.SOLAR INSOLATION	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2037 ALBEDO WFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

ERB-MATRIX COUNT OF NON-FILL DATA AND NON-ZERO POPULATIONS FOR 1978 1 NOVEMBER

DAY #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2001 POP! WFOV - AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2002 POP! WFOF - DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
2003 L.W.TERR.FLUX WFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2004 L.W.TERR.FLUX WFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
2005 MAX REFL.ENERGY(.2-4UM)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2006 MAX REFL.ENERGY(.2-4UM)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
2007 MAX REFL.ENERGY(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2008 MAX REFL.ENERGY(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
2009 REFL.ENERGY WFOV(.2-4)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2010 REFL.ENERGY WFOV(.2-4)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
2011 REFL.ENERGY WFOV(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2012 REFL.ENERGY WFOV(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
2013 ALBEDO WFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294
2014 ALBEDO WFOV(.2-.7)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294
2015 ALBEDO WFOV(.7-3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294
2016 NET RADIATION WFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2017 S.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1202
2018 S.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1121
2019 L.W.TERR.FLUX NFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1288
2020 L.W.TERR.FLUX NFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1206
2021 L.W.TERR.FLUX NFOV-AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1165
2022 ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	413
2023 NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1288
2024 L.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1206
2025 L.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2070
2036 AVG.SOLAR INSOLATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2037 ALBEDO WFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DAY #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY
2001 POP! WFOV - AN	189	199	0	594	649	656	0	597	634	681	0	593	601	642	0	2042
2002 POP! WFOF - DN	142	185	0	473	556	526	0	477	545	492	0	471	499	530	0	1804
2003 L.W.TERR.FLUX WFOV-AN	189	199	0	594	649	656	0	597	634	681	0	593	601	642	0	2042
2004 L.W.TERR.FLUX WFOV-DN	142	185	0	473	556	526	0	477	545	492	0	471	499	530	0	1804
2005 MAX REFL.ENERGY(.2-4UM)-AN	189	199	0	594	649	656	0	597	634	681	0	593	601	642	0	2042
2006 MAX REFL.ENERGY(.2-4UM)-DN	142	185	0	473	556	526	0	477	545	492	0	471	499	530	0	1804
2007 MAX REFL.ENERGY(.7-3)-AN	189	199	0	594	649	656	0	597	634	681	0	593	601	642	0	2042
2008 MAX REFL.ENERGY(.7-3)-DN	142	185	0	473	556	526	0	477	545	492	0	471	499	530	0	1804
2009 REFL.ENERGY WFOV(.2-4)-AN	189	199	0	594	649	656	0	597	634	681	0	593	601	642	0	2042
2010 REFL.ENERGY WFOV(.2-4)-DN	142	185	0	473	556	526	0	477	545	492	0	471	499	530	0	1804
2011 REFL.ENERGY WFOV(.7-3)-AN	189	199	0	594	649	656	0	597	634	681	0	593	601	642	0	2042
2012 REFL.ENERGY WFOV(.7-3)-DN	142	185	0	473	556	526	0	477	545	492	0	471	499	530	0	1804
2013 ALBEDO WFOV(.2-4)	172	177	0	542	589	599	0	543	577	554	0	542	553	590	0	1976
2014 ALBEDO WFOV(.2-.7)	172	177	0	542	589	599	0	543	577	554	0	542	553	590	0	1976
2015 ALBEDO WFOV(.7-3)	172	177	0	542	589	599	0	543	577	554	0	542	553	590	0	1976
2016 NET RADIATION WFOV	189	199	0	594	649	656	0	597	634	681	0	593	601	642	0	2042
2017 S.W.POP.NFOV -AN	1775	1561	0	1702	1850	1688	0	1536	1649	1599	0	1615	1581	1410	0	2022
2018 S.W.POP.NFOV -DN	192	197	0	177	179	179	0	172	174	172	0	163	164	162	0	262
2019 L.W.TERR.FLUX NFOV-AN	1830	1615	0	1763	1904	1748	0	1622	1736	1665	0	1704	1635	1500	0	2070
2020 L.W.TERR.FLUX NFOV-DN	1775	1684	0	1755	1899	1754	0	1754	1687	1680	0	1754	1675	1588	0	2070
2021 L.W.TERR.FLUX NFOV-AN+DN	1564	1342	0	1488	1735	1507	0	1406	1438	1316	0	1478	1371	1188	0	2070
2022 ALBEDO NFOV	1749	1531	0	1689	1823	1664	0	1535	1649	1599	0	1615	1581	1410	0	1992
2023 NET RADIATION NFOV	1561	1338	0	1486	1732	1502	0	1400	1430	1309	0	1469	1363	1177	0	2070
2024 L.W.POP.NFOV -AN	1830	1615	0	1763	1904	1748	0	1622	1736	1665	0	1704	1635	1500	0	2070
2025 L.W.POP.NFOV -DN	1775	1684	0	1755	1899	1754	0	1754	1687	1680	0	1754	1675	1588	0	2070
2036 AVG.SOLAR INSOLATION	2070	2070	0	2070	2070	2070	0	2070	2070	2070	0	2070	2070	2070	0	2070
2037 ALBEDO WFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1976

ORIGINAL PAGE IS OF POOR QUALITY

Appendix A. Abbreviations and Acronyms

A.N.:	Ascending Node
BPI:	Bits per Inch
D.N.:	Descending Node
EOF:	End-of-File
ERB:	Earth Radiation Budget
ERBM:	ERB MATRIX
FGGE:	First GARP Global Experiment
GSFC:	Goddard Space Flight Center
NASA:	National Aeronautics and Space Administration
NFOV:	Narrow Field of View
NRZI:	Non Return to Zero Inverse
S.W.	Short Wave
WDC-A:	World Data Center-A
WDC-B:	Word Data Cener-B Moscow
WFOV:	Wide Field of View
WMC:	World Meteorological Center

Appendix B. Sample Run Printout

TAPCAT SAMPLE OUTPUT

```
INPUT >>NEW  MXT2
   *NIMBUS-7 NOAA SPEC NO T134031 SO NO AA03201-2 ERB  SACC TO IPE  START 1978 320 000040 TO 1978 334 022350 CPU 1982 049 050614
** WARNING - TAPE HEADER TIME CDFS NOT MATCH DATA TIME
          ACTUAL START=   78  320    0: 0: 0
          ACTUAL STOP =   78  334    0: 0: 0


DISK FILE UPDATED



TAPE LIST FOR NIMBUS FORMAT  AA

INIT AA
ADD  L2618 AATOTH1 78/320:    0 78/334:    0        1978 NOV 16   0: 0: 0   1978 NOV 30   0: 0: 0          1
ADD  MXT2  AA83201 78/320:    0 78/334:    0        1978 NOV 16   0: 0: 0   1978 NOV 30   0: 0: 0          2
                                                                                          WARNING - DATA GAP BETWEEN TAPES
ADD  L2619 AATOTH2 78/350:    0 78/364:    0        1978 DEC 16   0: 0: 0   1978 DEC 30   0: 0: 0          3
                                                                                          WARNING - DATA GAP BETWEEN TAPES
ADD  L2614 AA00000 79/ 79:    0 79/ 83:    0        1979 MAR 20   0: 0: 0   1979 MAR 24   0: 0: 0          4

END OF CATALOG.                    4 TAPES.
```

LRBM-2C SAMPLE OUTPUT

```
>>>78 NOV - 78 NOV
DATA FILES TO BE USED:
        RXT2     AA83231          78  NOV 16 -   78  NOV 30
MOUNT SLOT # RXT2
INT TAPE >>>BL6949
NEXT OUTPUT SLOT IS # BL6058
OUTPUT FILE      1
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  6    TARGET=  17   SCALED VALUE=     3168    VALUE=  0.3167998E 03
FILE INREC ID  YR/DAY  MON/DAY  PARM FILL RANGE SCALE    N   AVG            NMIN   NMAX    BIAS    SLOPE
   2    6  31  78/320  11/16     6  1839     1     0    8  0.1584000E 03     0   3168     0.0     10.0
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  10   TARGET=  16   SCALED VALUE=     2006    VALUE=  0.2006000E 03
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  10   TARGET=  17   SCALED VALUE=     2252    VALUE=  0.2252000E 03
FILE INREC ID  YR/DAY  MON/DAY  PARM FILL RANGE SCALE    N   AVG            NMIN   NMAX    BIAS    SLOPE
   2   10  31  78/320  11/16    10  1839     2     0    7  0.1126000E 03     0   2252     0.0     10.0
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  19   TARGET= 1162   SCALED VALUE=      970    VALUE=  0.9700000E 02
FILE INREC ID  YR/DAY  MON/DAY  PARM FILL RANGE SCALE    N   AVG            NMIN   NMAX    BIAS    SLOPE
   2   19  31  78/320  11/16    19   762     1     0    7  0.2094000E 03   970   3218     0.0     10.0
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  22   TARGET=  144   SCALED VALUE=     1132    VALUE=  0.1132000E 01
FILE INREC ID  YR/DAY  MON/DAY  PARM FILL RANGE SCALE    N   AVG            NMIN   NMAX    BIAS    SLOPE
   2   22  31  78/320  11/16    22   885     1     0    0  0.6150000E 00    98   1132     0.0   1000.0
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  23   TARGET=  104   SCALED VALUE=    -2204    VALUE= -0.2204000E 03
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  23   TARGET=  144   SCALED VALUE=    -2910    VALUE= -0.2910000E 03
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  23   TARGET= 1973   SCALED VALUE=    -2053    VALUE= -0.2053000E 03
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  23   TARGET= 1974   SCALED VALUE=    -2044    VALUE= -0.2044000E 03
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  23   TARGET= 2007   SCALED VALUE=    -2124    VALUE= -0.2124000E 03
FILE INREC ID  YR/DAY  MON/DAY  PARM FILL RANGE SCALE    N   AVG            NMIN   NMAX    BIAS    SLOPE
   2   23  31  78/320  11/16    23  1657     7     0    8 -0.5635000E 02 -2910   1783     0.0     10.0
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  10   TARGET=  21   SCALED VALUE=     2030    VALUE=  0.2030000E 03
FILE INREC ID  YR/DAY  MON/DAY  PARM FILL RANGE SCALE    N   AVG            NMIN   NMAX    BIAS    SLOPE
   2   36  31  78/321  11/17    10  1928     1     0    7  0.1015000E 03     0   2030     0.0     10.0
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  22   TARGET= 1967   SCALED VALUE=     1246    VALUE=  0.1245999E 01
FILE INREC ID  YR/DAY  MON/DAY  PARM FILL RANGE SCALE    N   AVG            NMIN   NMAX    BIAS    SLOPE
   2   48  31  78/321  11/17    22   321     1     0    0  0.6729999E 00   190   1246     0.0   1000.0
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  23   TARGET= 2007   SCALED VALUE=    -2044    VALUE= -0.2044000E 03
FILE INREC ID  YR/DAY  MON/DAY  PARM FILL RANGE SCALE    N   AVG            NMIN   NMAX    BIAS    SLOPE
   2   49  31  78/321  11/17    23   509     1     0    8 -0.9800000E 01 -2044   1848     0.0     10.0
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  6    TARGET= 1915   SCALED VALUE=     5413    VALUE=  0.5412998E 03
FILE INREC ID  YR/DAY  MON/DAY  PARM FILL RANGE SCALE    N   AVG            NMIN   NMAX    BIAS    SLOPE
   2   56  31  78/322  11/18     4  1885     1     0    8  0.3515000E 03  1617   5413     0.0     10.0
 ** DATA VALUE OUTSIDE EXPECTED RANGE:  PARAMETER=  6    TARGET=  16   SCALED VALUE=     3151    VALUE=  0.3150999E 03
FILE INREC ID  YR/DAY  MON/DAY  PARM FILL RANGE SCALE    N   AVG            NMIN   NMAX    BIAS    SLOPE
   2   58  31  78/312  11/12     6  1885     1     0    8  0.1575500E 03     0   3151     0.0     10.0
```

FILE	INPEC ID	YR/DAY	HON/DAY	PARM	FILL	RANGE	SCALE	N	AVG	NMIN	NMAX	BIAS	SLOPE
8	44 33	78/320	11/32	16	28	1	0	8	-0.223500E 02	-2060	1613	0.0	10.0

END OF OUTPUT FILE 1 : TAPCNT= 78 320 0 78 334 86439

ERB-MATRIX COUNT OF AVAILABLE DAILY, MONTHLY RECORDS FOR 1978 : NOVEMBER

DAY #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 POP: WFOV - AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2 POP: WFOV - DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3 L.W.TERR.FLUX WFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4 L.W.TERR.FLUX WFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5 MAX REFL.ENERGY(.2-4UM)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6 MAX REFL.ENERGY(.2-4)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7 MAX REFL.ENERGY(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8 MAX REFL.ENERGY(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9 REFL.ENERGY WFOV(.2-4)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10 REFL.ENERGY WFOV(.2-4)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11 REFL.ENERGY WFOV(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12 REFL.ENERGY WFOV(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
13 ALBEDO WFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
14 ALBEDO WFOV(.2-.7)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
15 ALBEDO WFOV(.7-3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
16 NET RADIATION WFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
17 S.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
18 S.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
19 L.W.TERR.FLUX NFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
20 L.W.TERR.FLUX NFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
21 L.W.TERR.FLUX NFOV-AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
22 ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
23 NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
24 L.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
25 L.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
26 L.W.POP.WFOV INCR.DAILY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 L.W.POP.NFOV INCR.DAILY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 L.W.TERR.FLUX WFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 N.DISP.L.W.TERR.FLUX WFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 N.DISP.ALBEDO WFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 STD.DEV.NET RAD.WFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 N.DISP.L.W.TERR.FLUX NFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 N.DISP.ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34 STD.DEV NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35 MIN.ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36 AVG SOLAR INSOLATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37 ALBEDO WFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DAY #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY
1 POP: WFOV - AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2 POP: WFOV - DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
3 L.W.TERR.FLUX WFOV-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
4 L.W.TERR.FLUX WFOV-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
5 MAX REFL.ENERGY(.2-4UM)-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
6 MAX REFL.ENERGY(.2-4)-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
7 MAX REFL.ENERGY(.7-3)-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
8 MAX REFL.ENERGY(.7-3)-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
9 REFL.ENERGY WFOV(.2-4)-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
10 REFL.ENERGY WFOV(.2-4)-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
11 REFL.ENERGY WFOV(.7-3)-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
12 REFL.ENERGY WFOV(.7-3)-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
13 ALBEDO WFOV(.2-4)	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
14 ALBEDO WFOV(.2-.7)	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
15 ALBEDO WFOV(.7-3)	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
16 NET RADIATION WFOV	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
17 S.W.POP.NFOV -AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
18 S.W.POP.NFOV -DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
19 L.W.TERR.FLUX NFOV-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
20 L.W.TERR.FLUX NFOV-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
21 L.W.TERR.FLUX NFOV-AN+DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
22 ALBEDO NFOV	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
23 NET RADIATION NFOV	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
24 L.W.POP.NFOV -AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
25 L.W.POP.NFOV -DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
26 L.W.POP.WFOV INCR.DAILY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
27 L.W.POP.NFOV INCR.DAILY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

28 L.W.TERR.FLUX WFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
29 N.DISP.L.W.TERR.FLUX WFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
30 N.DISP.ALBEDO WFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
31 STD.DEV.NET RAD.WFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
32 N.DISP.L.W.TERR.FLUX NFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
33 N.DISP.ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
34 STD.DEV NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
35 MIN.ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
36 AVG SOLAR INSOLATION	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
37 ALBEDO WFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

ERB-MATRIX COUNT OF NON-FILL DATA AND NON-ZERO POPULATIONS FOR 1978 : NOVEMBER

DAY #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 POP: WFOV - AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2 POP: WFOV - DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
3 L.W.TERR.FLUX WFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
4 L.W.TERR.FLUX WFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
5 MAX REFL.ENERGY(.2-4UM)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
6 MAX REFL.ENERGY(.2-4)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
7 MAX REFL.ENERGY(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
8 MAX REFL.ENERGY(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
9 REFL.ENERGY WFOV(.2-4)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
10 REFL.ENERGY WFOV(.2-4)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
11 REFL.ENERGY WFOV(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
12 REFL.ENERGY WFOV(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
13 ALBEDO WFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294
14 ALBEDO WFOV(.2-.7)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294
15 ALBEDO WFOV(.7-3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294
16 NET RADIATION WFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
17 S.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1202
18 S.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	121
19 L.W.TERR.FLUX NFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1288
20 L.W.TERR.FLUX NFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1206
21 L.W.TERR.FLUX NFOV-AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	439
22 ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1185
23 NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	313
24 L.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1288
25 L.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1206
26 L.W.POP.WFOV INCR.DAILY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 L.W.POP.NFOV INCR.DAILY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 L.W.TERR.FLUX WFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 N.DISP.L.W.TERR.FLUX WFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 N.DISP.ALBEDO WFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 STD.DEV.NET RAD.WFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 N.DISP.L.W.TERR.FLUX NFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 N.DISP.ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34 STD.DEV NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35 MIN.ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36 AVG SOLAR INSOLATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2070
37 ALBEDO WFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DAY #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY
1 POP: WFOV - AN	189	199	0	594	649	656	0	597	634	651	0	593	601	642	0	2042
2 POP: WFOV - DN	142	185	0	473	556	526	0	477	545	492	0	471	499	530	0	1804
3 L.W.TERR.FLUX WFOV-AN	189	199	0	594	649	656	0	597	634	651	0	593	601	642	0	2042
4 L.W.TERR.FLUX WFOV-DN	142	185	0	473	556	526	0	477	545	492	0	471	499	530	0	1804
5 MAX REFL.ENERGY(.2-4UM)-AN	189	199	0	594	649	656	0	597	634	651	0	593	601	642	0	2042
6 MAX REFL.ENERGY(.2-4)-DN	142	185	0	473	556	526	0	477	545	492	0	471	499	530	0	1804
7 MAX REFL.ENERGY(.7-3)-AN	189	199	0	594	649	656	0	597	634	651	0	593	601	642	0	2042
8 MAX REFL.ENERGY(.7-3)-DN	142	185	0	473	556	526	0	477	545	492	0	471	499	530	0	1804
9 REFL.ENERGY WFOV(.2-4)-AN	189	199	0	594	649	656	0	597	634	651	0	593	601	642	0	2042
10 REFL.ENERGY WFOV(.2-4)-DN	142	185	0	473	556	526	0	477	545	492	0	471	499	530	0	1804
11 REFL.ENERGY WFOV(.7-3)-AN	189	199	0	594	649	656	0	597	634	651	0	593	601	642	0	2042
12 REFL.ENERGY WFOV(.7-3)-DN	142	185	0	473	556	526	0	477	545	492	0	471	499	530	0	1804
13 ALBEDO WFOV(.2-4)	172	177	0	542	589	599	0	543	577	594	0	542	553	590	0	1976
14 ALBEDO WFOV(.2-.7)	172	177	0	542	589	599	0	543	577	594	0	542	553	590	0	1976
15 ALBEDO WFOV(.7-3)	172	177	0	542	589	599	0	543	577	594	0	542	553	590	0	1976
16 NET RADIATION WFOV	189	199	0	594	649	656	0	597	634	651	0	593	601	642	0	2042
17 S.W.POP.NFOV -AN	1775	1561	0	1702	1350	1688	0	1536	1649	1599	0	1615	1581	1410	0	2022
18 S.W.POP.NFOV -DN	192	197	0	177	179	179	0	172	174	172	0	163	164	162	5	282
19 L.W.TERR.FLUX NFOV-AN	1830	1615	3	1763	1934	1748	0	1622	1736	1685	0	1704	1665	1500	0	2070
20 L.W.TERR.FLUX NFOV-DN	1775	1584	3	1755	1899	1754	3	1754	1697	1603	0	1754	1671	1588	0	2070
21 L.W.TERR.FLUX NFOV-AN+DN	1504	1342	3	1488	1735	1507	0	1406	1438	1316	0	1478	1371	1188	0	2070

23 ALBEDO NFOV	1749	1531	0	1680	1823	1664	0	1535	1649	1599	0	1615	1581	1410	0	1992
23 NET RADIATION NFOV	1561	1338	0	1486	1732	1502	0	1400	1430	1309	0	1469	1382	1177	0	2070
24 L.W.POP.NFOV -AN	1830	1615	0	1763	1904	1748	0	1622	1736	1685	0	1704	1669	1500	0	2070
25 L.W.POP.NFOV -DN	1775	1684	0	1755	1899	1754	0	1754	1687	1603	0	1754	1678	1588	0	2070
26 L.W.POP.NFOV INCR.DAILY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 L.W.POP.NFOV INCR.DAILY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 L.W.TERR.FLUX NFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 N.DISP.L.W.TERR.FLUX NFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 N.DISP.ALBEDO NFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 STD.DEV.NET RAD.NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 N.DISP.L.W.TERR.FLUX NFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 N.DISP.ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34 STD.DEV.NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35 MIN.ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36 AVG SOLAR INSOLATION	2070	2070	0	2070	2070	2070	0	2070	2070	2070	0	2070	2070	2070	0	2070
37 ALBEDO NFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1976

ERB-MATRIX COUNT OF DATA RANGE ERRORS FOR 1978 : NOVEMBER

DAY #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 POP: NFOV - AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 POP: NFOV - DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 L.W.TERR.FLUX NFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 L.W.TERR.FLUX NFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 MAX REFL.ENERGY(.2-4UM)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 MAX REFL.ENERGY(.2-4)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7 MAX REFL.ENERGY(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 MAX REFL.ENERGY(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9 REFL.ENERGY NFOV(.2-4)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 REFL.ENERGY NFOV(.2-4)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11 REFL.ENERGY NFOV(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 REFL.ENERGY NFOV(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 ALBEDO NFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 ALBEDO NFOV(.2-.7)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 ALBEDO NFOV(.7-3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 S.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 S.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 L.W.TERR.FLUX NFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 L.W.TERR.FLUX NFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 L.W.TERR.FLUX NFOV-AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 L.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 L.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26 L.W.POP.NFOV INCR.DAILY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 L.W.POP.NFOV INCR.DAILY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 L.W.TERR.FLUX NFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 N.DISP.L.W.TERR.FLUX NFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 N.DISP.ALBEDO NFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 STD.DEV.NET RAD.NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 N.DISP.L.W.TERR.FLUX NFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 N.DISP.ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34 STD.DEV.NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35 MIN.ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36 AVG SOLAR INSOLATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37 ALBEDO NFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DAY #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY
1 POP: NFOV - AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 POP: NFOV - DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 L.W.TERR.FLUX NFOV-AN	0	0	0	2	4	4	0	0	3	3	0	0	0	5	0	18
4 L.W.TERR.FLUX NFOV-DN	0	1	0	1	1	0	0	1	0	1	0	0	0	0	0	5
5 MAX REFL.ENERGY(.2-4UM)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 MAX REFL.ENERGY(.2-4)-DN	0	1	0	1	0	0	0	1	0	0	0	2	1	0	0	6
7 MAX REFL.ENERGY(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 MAX REFL.ENERGY(.7-3)-DN	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
9 REFL.ENERGY NFOV(.2-4)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 REFL.ENERGY NFOV(.2-4)-DN	1	1	0	1	0	0	0	3	2	2	0	1	0	1	0	15
11 REFL.ENERGY NFOV(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 REFL.ENERGY NFOV(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 ALBEDO NFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 ALBEDO NFOV(.2-.7)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 ALBEDO NFOV(.7-3)	0	0	0	1	0	1	0	1	2	4	1	3	4	3	0	20

16 NET RADIATION WFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
17 S.W.POP.NFOV -AN	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
18 S.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 L.W.TERR.FLUX NFOV-AN	0	1	0	0	1	0	0	0	0	0	0	3	0	0	0	0
20 L.W.TERR.FLUX NFOV-DN	0	1	0	2	0	0	0	0	0	0	0	1	0	0	0	0
21 L.W.TERR.FLUX NFOV-AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 ALBEDO NFOV	1	0	0	0	1	1	0	2	6	11	0	19	14	15	0	0
23 NET RADIATION NFOV	1	5	0	2	3	6	0	5	7	2	0	2	1	9	0	0
24 L.W.POP.NFOV -AN	0	0	0	1	10	3	2	0	0	3	0	2	0	0	0	0
25 L.W.POP.NFOV -DN	0	0	0	1	4	0	0	0	0	3	0	0	0	0	0	0
26 L.W.POP.WFOV INCR.DAILY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27 L.W.POP.NFOV INCR.DAILY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28 L.W.TERR.FLUX WFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29 N.DISP.L.W.TERR.FLUX WFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 N.DISP.ALBEDO WFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31 STD.DEV.NET RAD.WFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32 N.DISP.L.W.TERR.FLUX NFOV AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33 N.DISP.ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34 STD.DEV NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35 MIN.ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36 AVG SOLAR INSOLATION	0	0	0	0	0	0	0	0	1	16	0	216	228	322	0	0
37 ALBEDO WFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

RANGE ERROR SUMMARY: 1978 NOVEMBER

PARM #	EXPECTED RANGE	DAY	OBSERVED RANGE MIN	OBSERVED RANGE MAX	ERROR COUNT
3	100. 300.	20	152.9	305.3	2
		21	154.4	320.5	4
		22	153.8	322.9	4
		25	154.8	303.0	5
		26	153.8	308.4	3
		29	159.2	315.1	6
		30	160.5	316.7	5
		32	157.9	311.3	11
4	100. 300.	18	161.7	541.3	1
		21	150.3	335.8	1
6	0. 300.	16	0.0	316.8	1
		18	0.0	315.1	1
		20	0.0	309.9	1
		24	0.0	339.7	1
		28	0.0	358.8	2
		29	0.0	324.1	1
13	0. 200.	16	0.0	225.2	2
		17	0.0	203.0	1
		18	0.0	224.0	1
		20	0.0	220.1	1
		24	0.0	242.1	3
		25	0.0	230.7	2
		26	0.0	205.2	2
		28	0.0	255.6	11
		29	0.0	226.4	8
		30	0.0	215.0	10
		32	0.0	200.2	1
14	0. 100.	24	0.0	106.7	1
		28	0.0	111.7	2
15	0. 1.	20	0.1	1.1	1
		22	0.1	1.0	1
		24	0.1	1.1	1
		25	0.1	1.1	2
		26	0.1	1.0	4
		28	0.1	1.1	3
		29	0.1	1.2	4
		30	0.1	1.2	3
16	-200. 200.	32	-206.0	161.3	1
17	0. 600.	20	0.0	628.0	1
19	100. 400.	16	97.0	321.8	1
		18	54.6	348.3	1
		21	91.5	356.8	1
		26	54.8	349.8	3
21	100. 400.	18	89.6	377.3	1
		20	94.4	307.4	2
		28	94.8	308.1	1
22	0. 1.	16	0.1	1.1	1
		17	0.1	1.2	1
		21	0.1	1.1	1
		22	0.1	1.1	1

ORIGINAL PAGE IS
OF POOR QUALITY

			24	0.1	1.1	2
			25	0.1	1.1	6
			26	0.1	1.3	11
			28	0.1	1.5	19
			29	0.1	1.3	14
			30	0.1	2.0	15
23	-200.	200.	16	-291.0	178.3	7
			17	-204.4	184.8	1
			18	-201.1	226.5	5
			20	-194.0	203.9	2
			21	-208.9	204.9	3
			22	-210.0	204.6	6
			24	-208.8	221.3	8
			25	-211.1	208.2	7
			26	-203.2	206.2	2
			28	-202.8	195.2	2
			29	-198.7	206.4	1
			30	-215.2	197.2	9
24	0.	600.	20	0.0	628.0	1
			21	0.0	695.0	10
			22	0.0	670.0	3
			28	0.0	620.0	2
25	0.	600.	20	0.0	623.0	1
			21	0.0	685.0	4
36	0.	500.	25	0.0	500.3	1
			26	0.0	504.8	16
			28	0.0	513.4	216
			29	0.0	517.3	220
			30	0.0	521.4	332

END OF CRB-MATRIX PROCESSING
END OF CRB-MATRIX PROCESSING
END OF CRB-MATRIX PROCESSING
END OF CRB-MATRIX PROCESSING

ERBM-DP SAMPLE RUN OUTPUT

```
                    E R B - M - D P    P R O G R A M

                    **************************
                    *                        *
                    *  FGGE TAPE  UA1100     *
                    *                        *
                    **************************

                TAPE DESIGNATOR    UA1100
                SLOT NUMBER        BL5055
                PRINT LEVEL        0
                    SUMMARY PRINTOUT          = ON
                    RECORD HEADER PRINT       = OFF
                    DATA DUMP (FLOATING)      = OFF
                    SCALED DATA DUMP (INTEGER) = OFF
                    SCALED DATA DUMP (HEX)    = OFF


END FILE 1  -  TEST FILE:      258 BLOCKS.      0 I/O ERRORS.      0 DATA ERRORS


TAPE HEADER:
                FGGE2C2800708116007081130 8
                000240
                FORMAT(20A4)
                0123456789=:> STUVWXYZ.)-JKLMNOPQR$*;+ABCDEFGHI.)_<
                9 TRACK, 1600 BPI
                BINARY DATA, ODD PARITY
                IBM 360/91
                NASA / GODDARD SPACE FLIGHT CENTER          U.S.A.
                FORMAT(1060A4)

                THIS TAPE CONTAINS SELECTED TERRESTRIAL PARAMETERS FROM THE NIMBUS-7
                EARTH RADIATION BUDGET EXPERIMENT.

                PROCESSED FOR FGGE ON:  WED MAR 10,1982

                SCIENTIST:   GARY N WOLFORD
                ADDRESS:     NASA / GODDARD SPACE FLIGHT CENTER
                             GREENBELT, MARYLAND      20771
                             UNITED STATES OF AMERICA          (U.S.A.)

                THIS TAPE FOLLOWS THE FGGE LEVEL-3 FORMATS INSTEAD OF THE LEVEL-2 FORMATS.

                WARNING:   THE FILL FLAG FOR THE ARRAY OF PACKED INTEGERS  O(I) IS DEFINED
                           AS THE VALUE  B'1000000000000000' = X'8000' = -32768.
                           THE USER'S PROGRAM SHOULD CHECK FOR THIS FILL FLAG -BEFORE-
                           UNPACKING THE  O(I).  AS THE UNPACKING PRODUCES UNPREDICTABLE
                           RESULTS WHEN PERFORMED ON THE FILL FLAG.

END FILE  2  -  TAPE HEADER FILE:          4 BLOCKS.        0 I/O ERRORS


GRID DESCRIPTOR FILE:   THE ERB NUMBERING SYSTEM ASSIGNS A NUMBER, BETWEEN 1 AND 2370, TO EACH TARGET
                        AREA STARTING FROM THE SOUTH POLE.
                        FOR EACH LATITUDE BAND THE LONGITUDE INTERVALS START AT THE 0 DEGREE MERIDIAN
                        AND PROGRESS WEST BY THE INCREMENTS LISTED.
                        WITHIN EACH LATITUDE BELT THE TARGET NUMBERS INCREASE WESTWARD FROM THE 0.0 DEG
                        MERIDIAN AND CONTINUE TO INCREASE WITHIN THE ADJACENT LATITUDE BELT TO THE NORTH

                        TARGET NO.      LATITUDE LIMITS     LONGITUDE
                                                            INTERVAL

                        1-3             POLE     85.5         120.0
                        4-12            85.5     81.0          40.0
                        13-28           81.0     76.5          22.5
                        29-48           76.5     72.0          18.0
                        49-78           72.0     67.5          12.0
```

79-114	67.5	63.0	10.0
115-154	63.0	58.5	9.0
155-199	58.5	54.0	8.0
200-247	54.0	49.5	7.5
248-307	49.5	45.0	6.0
308-367	45.0	40.5	6.0
368-427	40.5	36.0	6.0
428-499	36.0	31.5	5.0
500-571	31.5	27.0	5.0
572-643	27.0	22.5	5.0
644-715	22.5	18.0	5.0
716-795	18.0	13.5	4.5
796-875	13.5	9.0	4.5
876-955	9.0	4.5	4.5
956-1035	4.5	EQUATOR	4.5
1036-1115	EQUATOR	4.5	4.5
1116-1195	4.5	9.0	4.5
1196-1275	9.0	13.5	4.5
1276-1355	13.5	18.0	4.5
1356-1427	18.0	22.5	5.0
1428-1499	22.5	27.0	5.0
1500-1571	27.0	31.5	5.0
1572-1643	31.5	36.0	5.0
1644-1703	36.0	40.5	6.0
1704-1763	40.5	45.0	6.0
1764-1823	45.0	49.5	6.0
1824-1871	49.5	54.0	7.5
1872-1916	54.0	58.5	8.0
1917-1956	58.5	63.0	9.0
1957-1992	63.0	67.5	10.0
1993-2022	67.5	72.0	12.0
2023-2042	72.0	76.5	18.0
2043-2058	76.5	81.0	22.5
2059-2067	81.0	85.5	40.0
2068-2070	85.5	POLE	120.0

END FILE 3 - GRID DESCRIPTOF FILE: 1 BLOCKS. 0 I/O ERRORS

45

END FILE 4 339 BLOCKS. 0 I/O ERRORS

ERB-MATRIX COUNT OF AVAILABLE DAILY/MONTHLY RECORDS FOR 1978 1 NOVEMBER

DAY #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2001 POP: WFOV - AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2002 POP: WFOV - DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2003 L.W.TERR.FLUX WFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2004 L.W.TERR.FLUX WFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2005 MAX REFL.ENERGY(.2-4UM)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2006 MAX REFL.ENERGY(.2-4UM)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2007 MAX REFL.ENERGY(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2008 MAX REFL.ENERGY(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2009 REFL.ENERGY WFOV(.2-4)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2010 REFL.ENERGY WFOV(.2-4)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2011 REFL.ENERGY WFOV(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2012 REFL.ENERGY WFOV(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2013 ALBEDO WFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2014 ALBEDO WFOV(.2-.7)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2015 ALBEDO WFOV(.7-3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2016 NET RADIATION WFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2017 S.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2018 S.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2019 L.W.TERR.FLUX NFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2020 L.W.TERR.FLUX NFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2021 L.W.TERR.FLUX NFOV-AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2022 ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2023 NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2024 L.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

2025 L.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2036 AVG.SOLAR INSOLATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2037 ALBEDO WFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

DAY #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY
2001 POP: WFCV - AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2002 POP: WFCF - DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2003 L.W.TERR.FLUX WFOV-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2004 L.W.TERR.FLUX WFOV-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2005 MAX REFL.ENERGY(.2-4UM)-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2006 MAX REFL.ENERGY(.2-4UM)-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2007 MAX REFL.ENERGY(.7-3)-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2008 MAX REFL.ENERGY(.7-3)-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2009 REFL.ENERGY WFCV(.2-4)-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2010 RFFL.ENERGY WFCV(.2-4)-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2011 RFFL.ENERGY WFOV(.7-3)-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2012 RFFL.ENERGY WFOV(.7-3)-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2013 ALBEDO WFOV(.2-4)	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2014 ALBEDO WFOV(.2-.7)	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2015 ALBEDO WFOV(.7-3)	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2016 NET RADIATION WFOV	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2017 S.W.POP.NFOV -AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2018 S.W.POP.NFOV -DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2019 L.W.TERR.FLUX NFOV-AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2020 L.W.TERR.FLUX NFOV-DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2021 L.W.TERR.FLUX NFOV-AN+DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2022 ALBEDO NFOV	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2023 NET RADIATION NFOV	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2024 L.W.POP.NFOV -AN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2025 L.W.POP.NFOV -DN	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2036 AVG.SOLAR INSOLATION	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1
2037 ALBEDO WFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

ERB-MATRIX COUNT OF NON-FILL DATA AND NON-ZERO POPULATIONS FOR 1978 : NOVEMBER

DAY #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2001 POP: WFCV - AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2002 POP: WFCF - DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
2003 L.W.TERR.FLUX WFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2004 L.W.TERR.FLUX WFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
2005 MAX REFL.ENERGY(.2-4UM)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2006 MAX REFL.ENERGY(.2-4UM)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
2007 MAX REFL.ENERGY(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2008 MAX REFL.ENERGY(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
2009 RFFL.ENERGY WFOV(.2-4)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2010 RFFL.ENERGY WFOV(.2-4)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
2011 REFL.ENERGY WFOV(.7-3)-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2012 RFFL.ENERGY WFOV(.7-3)-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	231
2013 ALBEDO WFOV(.2-4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294
2014 ALBEDO WFOV(.2-.7)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294
2015 ALBEDO WFOV(.7-3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294
2016 NET RADIATION WFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	319
2017 S.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1222
2018 S.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	121
2019 L.W.TERR.FLUX NFOV-AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1288
2020 L.W.TERR.FLUX NFOV-DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1206
2021 L.W.TERR.FLUX NFOV-AN+DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1439
2022 ALBEDO NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1185
2023 NET RADIATION NFOV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	413
2024 L.W.POP.NFOV -AN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1288
2025 L.W.POP.NFOV -DN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1206
2036 AVG.SOLAR INSOLATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2071
2037 ALBEDO WFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DAY #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTHLY
2001 POP: WFCV - AN	189	199	0	594	642	656	0	597	634	651	0	593	601	642	0	7262
2002 POP: WFCF - DN	132	185	0	473	536	526	0	477	545	492	0	471	495	537	0	5804
2003 L.W.TERR.FLUX WFOV-AN	189	199	0	594	642	656	0	597	634	651	0	593	601	642	0	7262
2004 L.W.TERR.FLUX WFOV-DN	132	185	0	473	536	526	0	477	545	492	0	471	495	537	0	5804
2005 MAX REFL.ENERGY(.2-4UM)-AN	189	199	0	594	642	656	0	597	634	651	0	593	601	642	0	7262

2006	MAX REFL.ENERGY(.2-4UM)-DN	142	185	0	473	556	526	0	477	545	492	0	471	495	530	0	1804
2007	MAX REFL.ENERGY(.7-3)-AN	189	199	0	594	649	656	0	597	634	651	0	593	601	642	0	2042
2008	MAX REFL.ENERGY(.7-3)-DN	142	185	0	473	556	526	0	477	545	492	0	471	495	530	0	1804
2009	REFL.ENERGY WFOV(.2-4)-AN	189	199	0	594	649	656	0	597	634	651	0	593	601	642	0	2042
2010	REFL.ENERGY WFOV(.2-4)-DN	142	185	0	473	556	526	0	477	545	492	0	471	495	530	0	1804
2011	REFL.ENERGY WFOV(.7-3)-AN	189	199	0	594	649	656	0	597	634	651	0	593	601	642	0	2042
2012	REFL.ENERGY WFOV(.7-3)-DN	142	185	0	473	556	526	0	477	545	492	0	471	495	530	0	1804
2013	ALBEDO WFOV(.2-4)	172	177	0	542	589	599	0	543	577	594	0	542	553	590	0	1976
2014	ALBEDO WFOV(.2-.7)	172	177	0	542	589	599	0	543	577	594	0	542	553	590	0	1976
2015	ALBEDO WFOV(.7-3)	172	177	0	542	589	599	0	543	577	594	0	542	553	590	0	1976
2016	NET RADIATION WFOV	189	199	0	594	649	656	0	597	634	651	0	593	601	642	0	2042
2017	S.W.POP.NFOV -AN	1775	1561	0	1702	1850	1688	0	1536	1649	1599	0	1615	1581	1410	0	2022
2018	S.W.POP.NFOV -DN	192	197	0	172	179	179	0	172	174	172	0	163	164	163	0	383
2019	L.W.TERR.FLUX NFOV-AN	1830	1615	0	1761	1904	1748	0	1622	1736	1685	0	1704	1669	1500	0	2070
2020	L.W.TERR.FLUX NFOV-DN	1775	1684	0	1755	1899	1754	0	1754	1687	1600	0	1754	1675	1588	0	2070
2021	L.W.TERR.FLUX NFOV-AN+DN	1534	1342	0	1488	1735	1507	0	1406	1438	1310	0	1478	1371	1188	0	2370
2022	ALBEDO NFOV	1749	1531	0	1680	1823	1664	0	1535	1649	1599	0	1615	1581	1410	0	1992
2023	NET RADIATION NFOV	1561	1338	0	1486	1732	1502	0	1400	1430	1309	0	1469	1363	1177	0	2070
2024	L.W.POP.NFOV -AN	1830	1615	0	1763	1904	1748	0	1622	1736	1685	0	1704	1669	1500	0	2070
2025	L.W.POP.NFOV -DN	1775	1684	0	1755	1899	1754	0	1754	1687	1600	0	1754	1675	1588	0	2070
2026	AVG.SOLAR INSOLATION	2070	2070	0	2070	2070	2070	0	2070	2070	2070	0	2070	2070	2070	0	2070
2027	ALBEDO WFOV(.2-4) UNCORRECTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1976